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conclusion that dolomites are essentially offshore products. (Journ. Geol., Vol. III, 1895.)

CENOZOIC.—Certain data accumulated by H. B. Kümmel indicate the glaciation of Pocono Knob and Mts. Ararat and Sargar Loaf in Wayne County, Pennsylvania. It has been hitherto held by the Pennsylvania State Geologists that these peaks were nunataks. (Amer. Journ. Sci., 1876.)

According to Dr. Grossmann, glacial phenomena in the Færoes comprise *roche moutonnées*, glacial *striæ*, glacial mounds and boulder clay. The author states that there is no doubt that the islands had a glaciation of their own, a conclusion which is inconsistent with the hypothesis of a big northern ice cap. (Geog. Journ., Vol. VII, 1896.)

M. Harlé has identified the canine tooth and phalangeal bones of a lion, two molar teeth of a reindeer, and a molar tooth of an elan (*Alces*) in the fragmentary specimens from the Tourasse caverns in the southwestern part of France. From the evidence of other remains, M. Regnault fixed the age of this cave as intermediate between late Paleolithic and Neolithic. The presence of lion remains at Tourasse shows that this carnivore lingered long in the Pyrenees. (*L'Anthropol.*, 1894.)

CAVE EXPLORATIONS IN TENNESSEE.—We discovered the tapir-peccary layer in the cave breccia together with a later fauna in a layer of cave earth, associated with Indian remains, in Zirkel's Cave near Mossy Creek, east Tennessee. Prof. Cope, our informant, had previously found the former in 1869.—H. C. MERCER.

BOTANY.¹

The Conifers of the Pacific Slope.—Every botanist who is interested in the Conifers (and what *botanist* is not?) will be pleased with the pocket edition of Mr. J. G. Lemmon's "Hand-book of West American Cone-bearers," which appeared somewhat less than a year ago. It is a duodecimo volume of about a hundred pages, and includes seventeen half-tone plates, from photographs, of the foliage, cones, and other characteristic features. The text consists of brief descriptions of the genera and species, interspersed with notes, discussions and narra-

¹ Edited by Prof. C. E. Bessey, University of Nebraska, Lincoln, Nebraska.

tion. In a prefatory note we are informed that this is but a prodrome to a complete work which the author has in preparation, in which full scientific and popular descriptions are to be given. The little volume before us with its modest price of but one dollar should find its way into the library of every botanist, and all will look with expectation to the completion of the larger work.—CHARLES E. BESSEY.

Still another High School Botany.—It will not be the fault of the book-makers if the young people of the country are not versed in Botany, for one scarcely takes up a scientific journal nowadays without finding an announcement of some forthcoming book, or of one just issued. It is a sign of much botanical activity in the public schools, for it is very certain that the publishers are bringing these books out in response to what they regard as a sufficient demand. The last one on our table is the *Elements of Botany* prepared by J Y. Bergen, instructor in Biology in the English High School of Boston. It is, we are told in the preface, “for the most part an expansion of the manuscript notes which have for some years formed the basis of the botany teaching in the Boston English High School.” The book is thus to a large extent a growth; and not a creation. It looks usable, and what is more it has every appearance of being a profitable book to the user. An importance feature of the work is found in its many physiological experiments and observations which are to be made by the pupil. The whole work has a strong physiological bias which will be of much value in leading the pupil to the study of the plant in action, rather than to the identification of species.

Still with all its excellence the book presents the elements of botany in a fragmentary way. After over two hundred pages given to flowering plants, we find but twenty-seven pages given to “Some Types of Flowerless Plants.” The pupil will imbibe the notion from this book that the flowerless plants are of less importance than those which receive so much more attention. The book should be called the *Elements of the Anatomy and Physiology of the Flowering Plants*, and thus restricted it is admirable; but the author was not warranted in calling it the *elements of Botany*, that is of the whole science, for it certainly does not present the elements of the *science* of Botany. We are glad to note in the very much abridged *Flora* at the end of the book a departure from the usual sequence of families, but we regret to see that the Gymnosperms, while given their proper place below the Angiosperms, are described in accordance with the old views as to their morphology. When we describe the staminate cones of the pine as catkins of monandrous flowers, and the ovaliferous cones as catkins of

"spirally arranged carpel scales," we must be consistent, and put the Gymnosperms where Bentham and Hooker, Gray and Watson put them, as the simplest of the Apetalæ.—CHARLES E. BESSEY.

Popular Botany.—We frequently deplore the ignorance of people in general as to the main facts of botanical science, and sometimes we berate them for not taking more interest in what we find so attractive. Yet when we are asked to recommend a book to a non-botanical friend we are sorely puzzled. It is true that we may name Kerner's *Natural History of Plants*, which no doubt if well read would be greatly edifying, but it costs so much, and is so big a book that few can afford the time or money it demands. We know that it is regarded by many botanists as quite the thing to sneer at Grant Allen's books on plants, but we are not of these, and on the contrary have always admired his ability to state scientific facts—dry facts too—in a way which makes them readable and even entertaining. In his latest booklet—*The Story of the Plants*—he maintains his reputation for entertaining and at the same time instructive writing. We commend it to the non-botanical who wish to get some general notions of plants, and may we also make bold to suggest that our severely critical and truly scientific botanists run it through. It may be suggestive to them, even.

The author pleasantly tells us "How plants began to be," "How plants came to differ from one another," "How plants eat," "How plants drink," "How plants marry," "Various marriage customs," "The wind as a carrier," "How flowers club together," "What plants do for their young," "The stem and branches," "Some plant-biographies," "The past-histories of plants." That he makes slips here and there may well be granted, but not more, we venture to say, than are made by authors of some more ambitious works.—CHARLES E. BESSEY.

Notes of Botanical Papers.—Edward C. Jeffrey in the December *Annals of Botany* figures and describes polyembryony in *Erythronium americanum*, in which *four embryos* developed in each ovule by the division of the fertilized oosphere.—The freshwater Chlorophyceæ of Northern Russia, are enumerated by O. Borge, in a 40 page paper, accompanied by three plates, the latter mainly of new species or varieties.—The Adirondack Black Spruce is treated fully, both economically and scientifically by Wm. F. Fox the superintendent of state forests for New York, in the Report of the Forest Commission for 1894. This paper has been issued under its title as a separate book of eighty-two pages. It is illustrated by many half-tone and two colored plates.—A. P. Morgan continues his studies of North American Fungi in the

Journal of the Cincinnati Society of Natural History (April-July, 1895) and describes some new genera and species. Three plates accompany the paper, giving illustrations of every species.—In *El Barbareno* (Santa Barbara, California), Mrs. Ida Blochman writes pleasantly and instructively about the California wild flowers. Such papers will do much to help acquaint busy people with the plants about them. It would be well if botanists elsewhere were to imitate Mrs. Blochman.—The recent death of Julien Vesque (July 25, 1895) brings to us a series of necrological papers by Dehérain, Bonnier, Duclaux, Schribaux and Bertrand, accompanied by a photogravure of the lamented investigator. Julien Vesque was born in Luxembourg, April 8, 1848, educated in the Grand Ducal Atheneum of Luxembourg, studied in Berlin (under Braun and Kny) and afterwards in Paris with Brongniart, Duchartre and Decaisne. He was early made a member of the Institut Agronomique, in which he was an active worker at the time of his death. The collected titles of his botanical papers number sixty-seven, covering twenty-two years (1873-1895).—Lewis's Leaf-Charts promise to be very useful. They consist of very accurately drawn life-size drawings of characteristic leaves of North American trees. Their moderate price (50 cents per chart, 22 x 28 inches) should warrant their being placed in many of the public schools.—Century III of C. L. Shear's New York Fungi is now in course of distribution. It will prove to be of more than usual interest containing as it does several new or recently described species. This distribution of fungi has met with unusual success, every copy of Century I having long since been taken, no doubt due to the excellence of the specimens. It should be mentioned that the author has removed to Lincoln, Nebr. where he is engaged in botanical studies.

VEGETABLE PHYSIOLOGY.¹

Change in Structure of Plants due to Feeble Light.—The evidence that new species of plants are developed directly and rapidly out of old ones by changes in the environment is becoming more and more conclusive each year. Plants put into markedly different surroundings either perish or become rapidly modified to meet the changed demands made by the new conditions. One of the most recent and

¹ This department is edited by Erwin F. Smith, Department of Agriculture, Washington, D. C.